

TABLE 1.—Free-air temperatures, relative humidities, and vapor pressures during the year 1926—Continued

VAPOR PRESSURE (mb.)												
Altitude (m.) m. s. l.	Broken Arrow, Okla. (233 meters)		Due West, S. C. (217 meters)		Ellendale, N. Dak. (444 meters)		Groesbeck, Tex. (141 meters)		Royal Center, Ind. (235 meters)		Washington, D. C. (7 meters)	
	Mean	De- parture from 9-yr. mean	Mean	De- parture from 6-yr. mean	Mean	De- parture from 9-yr. mean	Mean	De- parture from 9-yr. mean	Mean	De- parture from 9-yr. mean	Mean	De- parture from 5-yr. mean
Surface	13.42	-0.29	13.84	-0.07	7.65	-0.47	16.54	-0.18	10.50	-0.33	12.16	-----
250	13.32	-0.28	13.63	-0.06	-----	-0.50	15.92	-0.17	10.38	-0.29	11.24	-----
500	12.10	-0.03	12.24	-0.02	7.41	-0.50	14.54	-0.05	9.28	-0.09	10.13	-----
750	11.00	+0.07	11.25	0.00	6.63	-0.43	13.20	+0.09	8.56	+0.15	9.30	-----
1,000	10.08	+0.12	10.39	+0.02	6.12	-0.31	11.80	+0.21	7.92	+0.25	8.50	-----
1,250	8.99	+0.01	9.45	-0.01	5.59	-0.26	10.27	+0.02	7.28	+0.34	7.84	-----
1,500	8.00	-0.04	8.45	-0.08	5.10	-0.20	8.88	-0.25	6.59	+0.38	7.25	-----
2,000	6.27	+0.01	6.73	-0.08	4.22	-0.11	6.97	-0.16	5.29	+0.41	6.14	-----
2,500	4.88	-0.01	5.23	-0.16	3.49	-0.05	5.60	-0.10	4.16	+0.45	4.98	-----
3,000	3.96	+0.11	4.26	-0.01	2.86	-0.02	4.54	-0.05	3.28	+0.42	3.89	-----
3,500	3.22	+0.14	3.48	+0.05	2.38	-0.10	3.63	-0.09	2.64	+0.45	2.90	-----
4,000	2.70	+0.29	3.03	+0.21	1.87	-0.03	3.25	+0.19	2.44	+0.81	2.08	-----
4,500	2.27	+0.40	2.32	+0.01	1.40	-0.10	2.63	-0.04	2.40	+1.08	1.42	-----
5,000	1.91	+0.38	1.26	+0.71	0.74	-0.57	2.70	+0.28	-----	-----	1.02	-----

THE WEATHER ELEMENTS

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PRESSURE AND WINDS

There were few conditions that marked the weather as distinctive from that of an average winter month, though changes were frequent and important, as may be expected in the first month of winter.

Important cyclones were notably absent during the first decade, although there were some local heavy rains on the 2d and 3d in northern California and portions of the far Northwest and in southwestern Arizona on the 4th and 5th and again on the 10th; in fact rain was almost of daily occurrence from the 4th to 14th over much of the State, and in the vicinity of Yuma the local fall was far above the normal for the month and nearly twice as much as in any previous December of record.

During about the same period as referred to above there was rather widely scattered precipitation in the southern Plains, and thence east and northeast, some heavy falls occurring in northern Texas and near-by areas on the 6th and 7th and in southern Texas on the 10th.

A cyclone with marked barometric depression moved into the upper Missouri Valley on the 11th and thence rapidly advanced southward to Colorado during the following 24 hours, attended by some of the lowest pressures ever observed during December in that region. This storm merged with another moving in the same direction somewhat farther east, and curved sharply to the northeast during the afternoon and night of the 12th and on the morning of the 13th was central over the upper Lakes, moving thence to northward of the St. Lawrence Valley during the following day. Despite the low pressures in the early life of this cyclone it was not attended by important precipitation except far south of its center, in Tennessee and near-by sections, where local heavy rains occurred on the 13th and again on the 14th.

No extensive cyclonic disturbances occurred during the latter part of the second decade, but on the 20th pressure was low over the Southwest, and by the morning of the 21st the center of a moderate cyclone was over Arkansas and heavy rains had fallen over large areas in that and near-by States. At Little Rock a total fall of nearly 6 inches occurred within 24 hours on the 20th

and 21st, and amounts nearly as large were reported from points in near-by States. As this storm moved northeastward toward the Middle Atlantic States local heavy rains occurred during the 22d.

Another cyclone moving from the southern Plains northeastward to the Great Lakes on the 23d and 24th again brought local heavy rains over much of the area covered by that of a few days previous. This was quickly followed by still another low-pressure area that moved from southern Texas northeastward, again causing heavy precipitation over much of the area visited by previous storms, but including much of the country to the eastward, though here the precipitation was mainly not so heavy.

By the morning of the 28th cyclonic conditions had overspread the lower Mississippi Valley and local heavy rains were again falling in that region, extending during the following 24 hours to all districts east and northeast, heavy rains falling in the Atlantic States with more or less snow in the Lake region, upper Ohio Valley, and to the northeast.

Anticyclones dominated the weather in the Plateau and in northern and central districts. One of the most important of these entered the upper Missouri Valley on the morning of the 13th and, drifting slowly south-eastward, favored cold and fair weather over most central and eastern districts until the end of the second decade.

An extensive anticyclone covered the far Northwest on the 23d and by the following morning was centrally located over the middle Plateau, whence it drifted south and east during the following few days, but lost intensity as it approached the Atlantic coast.

By the 27th an anticyclone had overspread the California coast and moving into the middle Plateau dominated the weather from the Rocky Mountains westward until the close of the month.

Except in a few instances barometric gradients were not unusual, and hence wind velocities were not high or extensive; only in local areas was there damaging wind.

The prevailing directions were marked by unusual differences at neighboring stations and no important areas had prevailing winds uniformly from a single direction. Details concerning damage by winds or other storms appear at the end of this section.

TEMPERATURE

December again showed a tendency toward above-normal temperatures over the far western districts, as in practically all the preceding months, while in the Great Lakes region and to the eastward a tendency toward lower than normal temperatures, which has persisted since February, was again rather marked.

As a whole the month had frequent changes in temperature and numerous comparatively brief cold waves moved across the northern and central districts from the Rocky Mountains eastward; no unusual cold was experienced over extensive areas.

The first week was decidedly cold over northern districts from the Rocky Mountains eastward, but mainly warmer than normal in the South and far West, the week being unusually warm in the middle Rocky Mountain and Plateau regions. The second week continued decidedly warmer than normal in the Southeast and moderately so in the Southwest, but there was a change to moderate cold in the far Northwest, and it continued cold in northern and central districts eastward as far as the Great Plains, and in the extreme Northeast.

The third week was mainly colder than normal, due to an extensive anticyclone that moved into the upper Missouri Valley at the beginning attended by subzero temperatures, and gradually spread eastward and southward, the pressure continuing high over most of the country until near the end of the week, though there was some warming up as the week advanced, particularly over the far West. The week as a whole was colder than normal in practically the whole country, and freezing temperatures extended to all parts save Florida, a narrow strip along the Gulf coast, in extreme southern Texas, and over the lower elevations of Arizona and California.

The last decade had frequent and over some districts important changes in temperature, with the coldest weather of the month about the middle of the decade in the Southwest and at the end at points in Florida. It was distinctly colder than normal from the Rocky Mountains westward and mainly near normal or warmer to the eastward.

The warmest periods were about the 1st and 2d over most portions from the Rocky Mountains westward and along the North Atlantic coast, about the 10th to 14th along the northern boundary and in the Ohio Valley and Middle Gulf States, and in the early part of the last decade along the South Atlantic coast. At Fresno, Calif., the maximum temperature on the 1st, 79°, was the highest ever observed in December.

The lowest temperatures were observed from the 5th to 7th along the North Atlantic coast, about the 14th to 16th from the far Northwest southeastward to the Ohio Valley and Middle Gulf States, about the 24th to 27th in the Southwest, and over the Florida Peninsula on the 31st.

The lowest temperature reported was -49° in the mountains of Wyoming, while at Ludington, on the east shore of Lake Michigan, a minimum of -4° on the 18th was the lowest ever observed at that station in December.

PRECIPITATION

As has been the case for a number of months past, precipitation for the country as a whole was materially above normal, due not so much to the area covered, since more than half the States showed deficiencies, but to the heavy falls over restricted areas.

From Arizona and Utah eastward precipitation was everywhere above normal, except over the Florida Peninsula and the near-by portions of the Gulf and South Atlantic States. In portions of this area, notably in southwestern Arizona, the monthly amounts were far above normal and greatly exceeded any previous December precipitation in more than 50 years. In portions of northeastern Texas and thence over northern Louisiana, eastern Oklahoma, most of Arkansas, much of Kentucky and Tennessee, and northern Mississippi and Alabama, the monthly precipitation exceeded the normal December fall by from 5 to 10 inches, and in numerous instances the monthly amounts were the greatest or nearly the greatest ever received in December. The

average for Tennessee was more than 6 inches above normal, the greatest December average of record.

The large totals of precipitation over the areas last referred to were confined mainly to the third decade, in which rains were of almost daily occurrence except on the last two or three. Local 24-hour falls during this period were in excess of 6 inches, in some instances the greatest ever measured in December.

The precipitation was moderately deficient in the Pacific Coast States and generally from Missouri and Iowa northward over the Lake region and New England, and from southern Louisiana eastward to the South Atlantic coast. In Florida the average precipitation was less than 1 inch, the least for December in nearly 40 years of statewide observations.

Heavy rains during the latter part of the month over portions of the lower Mississippi Valley and the southern tributaries of the Ohio caused serious floods, full details of which appear elsewhere in this issue.

SNOWFALL

All parts of the country had more or less snow except the low elevations of the far Southwest and along the Pacific coast, and from eastern Texas to the Carolinas and southeastern Virginia, where practically no snow fell.

Snow was unusually heavy in portions of central and western New York, and elsewhere from central Pennsylvania to New England, and over parts of the Great Lakes region the amounts ranged usually from 10 to 25 inches or more. Over the western slopes of the Appalachians from southern Virginia to Maryland and westward to the Great Plains and thence northward to the Canadian boundary the amounts ranged up to 5 or locally to even 10 inches. Farther south there were mainly only light falls, except in portions of northern Texas, where amounts up to 5 inches or more were reported.

About the normal amounts fell in the Rocky Mountain States and to the westward, except in the central and northern Sierra and over much of Nevada and near-by areas, where there was a general deficiency, particularly in Nevada.

A near blizzard, but covering an unusually small area, visited Buffalo, N. Y., and its immediate vicinity on the 16th. Fifteen inches of snow fell, the greatest amount in many years, and the high winds caused much drifting and seriously delayed traffic.

Glaze and ice storms were reported locally in Iowa and at points eastward through Illinois, Indiana, and into Michigan on the 7th and in the vicinity of Harrisburg, Pa., on the 25th and 26th, where considerable damage was reported.

RELATIVE HUMIDITY

Over practically all the country the average percentages of relative humidity were above normal, the principal exceptions being California and Oregon and the extreme Southeastern States, where the averages were mainly less than normal. Over portions of the Southwest the averages were at many points 10 to 15 per cent above normal, but elsewhere they were mainly near the normal.